

Seneca R 7 School District Course: 7th Science Grade Level: 7

Unit	Topic	MLS		Activities	Primary Resources
1	Scientific Method	6-8.ETS1.B.2	Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success	<ul style="list-style-type: none"> Notes Bubble Lab CER station activity Review Game 	CANVAS Progress Learning Textbook: Science Explorer (Pearson Prentice Hall, 2009)
		6-8ETS1.A.1	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions		
		Objectives	<ul style="list-style-type: none"> Contrast qualitative and quantitative as these words relate to data Understand the order of the steps to the Scientific Method Differentiate between a hypothesis and a theory Identify dependent and independent variables Contrast constants and controls as these words relate to an experiment Write a CER for a science experiment 		
		Key Terms	scientific method, theory, evidence, constant, experiments, control group, observation, data, results, experimental group, analyze, conclusion, variables, qualitative, quantitative, reasoning, independent variable, hypothesis, problem, claim		
		Common Assessments	Quiz: Scientific Method Test: Scientific Method		

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2	States of Matter	6-8.PS1.A.4	Develop a model that describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed	<ul style="list-style-type: none"> Notes Guided Reading Bill Nye video Review Game 	CANVAS Progress Learning Textbook: Science

		Objectives	<ul style="list-style-type: none"> List characteristics of solids, liquids, and gasses Define four state changes: melting, freezing, vaporization, condensation Illustrate how thermal energy causes particles to move faster Demonstrate that energy is directly related to particle movement Explain the kinetic molecular theory Differentiate crystalline and amorphous Define viscosity Explain the relationship between temperature and volume Calculate for missing variables using Boyle's Law and Charles' Law 		Explorer (Pearson Prentice Hall, 2009)
		Key Terms	solid, liquid, gas, exothermic, endothermic, freezing, melting, condensation, vaporization, sublimation, deposition, kinetic molecular theory, crystalline, amorphous, viscosity		
		Common Assessments	Quiz: Vocabulary (part 1) Quiz: Vocabulary (part 2) Test: States of Matter		

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3	Thermal Energy Transfer	6-8.PS3.A.1	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object	<ul style="list-style-type: none"> Notes Bill Nye video Guided reading Frosty Hut individual design project 	CANVAS Progress Learning Textbook: Science Explorer (Pearson Prentice Hall, 2009)
		6-8.PS3.A.2	Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system		
		6-8.PS3.A.3	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.		
		6-8.PS3.A.4	Plan and conduct an investigation to determine the		

			relationships among the energy transferred, the type of matter, the mass, and the change in the temperature of the sample		
		Objectives	<ul style="list-style-type: none"> • Design and build a hut that maintains thermal energy • Describe the efficiency of the hut to maintain a constant temperature • Differentiate between radiation, conduction, and convection • Use the Celsius, Fahrenheit, and Kelvin scales with accuracy • Define specific heat using examples for support • Give examples of conductors and insulators • Describe the idea that heat is the transfer of energy from hot to cold 		
		Key Terms	kinetic energy, potential energy, temperature, Fahrenheit scale, Celsius scale, Kelvin scale, Absolute zero, heat, specific heat, conduction, convection, convection current, radiation, conductor, insulator		
		Common Assessments	Quiz: Vocabulary (part 1) Quiz: Vocabulary (part 2) Test: Thermal Energy Test: Frosty		

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4	Waves	6-8.PS4.A.1	Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave	<ul style="list-style-type: none"> • Notes • Bill Nye video • Slinky wave lab • Review Game 	CANVAS Progress Learning Textbook: Science Explorer (Pearson Prentice Hall, 2009)
		6-8.PS4.A.2	Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials		
		Objectives	<ul style="list-style-type: none"> • Label the following parts of a wave: crest, trough, wavelength, amplitude, node, antinode • List examples of the types of waves: transverse, longitudinal, mechanical, seismic, surface 		

		<ul style="list-style-type: none"> • Demonstrate the relationship of wavelength and frequency • Research the application of seismographs • Differentiate reflection, refraction, diffraction, rarefaction • Explain how amplitude affects resonance 		
	Key Terms	wave, medium, mechanical wave, vibration, transverse wave, crest, longitudinal wave, compression, rarefaction, amplitude, wavelength, frequency, reflection, refraction, diffraction, interference, constructive interference, destructive interference, node, antinode, resonance, seismic wave, surface wave, tsunami, seismograph		
	Common Assessments	Quiz: Vocabulary Test: Waves		

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5	Force and Motion	6-8.PS2.A.1	Apply physics principles to design a solution that minimizes the force of an object during a collision and develop an evaluation of the solution	<ul style="list-style-type: none"> • Notes • Video • Work stations • Calculation Worksheets • Into the Spider Verse Forces • Review Game 	CANVAS Progress Learning Textbook: Science Explorer (Pearson Prentice Hall, 2009) https://mkpc.malahi.edu.net/
		6-8.PS2.A.2	Plan and conduct an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object		
		Objectives	<ul style="list-style-type: none"> • Solve mathematical equations using the following variables: force, mass, acceleration, speed, distance, time • Identify examples of Newton's Laws • Explain the cause and effect of friction • Contrast speed and velocity • Identify objects speeding up, slowing down, and changing directions 		
		Key Terms	force, motion, inertia, acceleration, Newton's Laws, mass, friction, velocity, speed, deceleration, gravity, momentum, weight, work		

		Common Assessments	Quiz: Forces Vocabulary Quiz Test: Force Assessment
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6	Magnetic & Electric Forces	6-8.PS2.B.1	Analyze diagrams and collect data to determine the factors that affect the strength of electric and magnetic forces	<ul style="list-style-type: none"> Notes Phet Simulation Lab-Electromagnets Review Game 	CANVAS Progress Learning Textbook: Science Explorer (Pearson Prentice Hall, 2009)
		6-8.PS2.B.3	Conduct an investigation and evaluate the experimental design to provide evidence that electric and magnetic fields exist between objects exerting forces on each other even though the objects are not in contact		
		Objectives	<ul style="list-style-type: none"> Build an electromagnet Draw a diagram of an electric current Explain how resistance affects current Describe the magnetic field of the Earth Identify the differences between attraction and repulsion Explain how distance affects magnetic strength 		
		Key Terms	Magnetic field, force, repel, attract, electricity, current, resistance, charge, positive charge, negative charge, electromagnetism		
		Common Assessments	CER: Magnetic Field Quiz: Magnetic Vocabulary Quiz Test: Magnet Assessment		

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7	Earth, Sun & Moon	6-8.ESS1.A.1	Develop and use a model of the Earth-sun-moon system to explain the cyclic patterns of lunar phases and eclipses of the sun and moon	<ul style="list-style-type: none"> Notes Bill Nye Video Science Book Worksheets Review Game 	CANVAS Quizlet Bill Nye Progress Learning

		6-8.ESS1.A.2	Develop and use a model of the Earth-sun system to explain the cyclical pattern of seasons, which includes the Earth's tilt and directional angle of sunlight on different areas of Earth across the year.		Textbook: Science Explorer (Pearson Prentice Hall, 2009)
		6-8.ESS1.A.3	Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system		
		6-8.ESS1.B.1	Analyze and interpret data to determine scale properties of objects in the solar system		
		Objectives	<ul style="list-style-type: none"> Describe how Earth rotates on its axis in one day and revolves around the Sun in one year Students will be able to explain the different shapes and phases of the moon. describe the movement of Earth around the Sun and identify how long this takes, describe the movement of the Moon around Earth and identify how long this takes. 		
		Key Terms	Eclipse, rotation, axis, full moon, revolution, sphere, solstice, waning, waxing, crescent, orbit, seasons, eclipse, astronomy		
		Common Assessments	Quiz: Vocabulary Quiz Test: Earth, Moon, & Sun Assessment		

Unit	Topic	MLS		Activities	Primary Resources
8	Weather	6-8.ESS2.C.2	Research, collect, and analyze data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions	<ul style="list-style-type: none"> Notes Barometer readings Video-storm rising Video-wind Guided Reading Science Book Worksheets Game Review 	CANVAS Blooket Nearpod Quizlet Progress Learning Textbook: Science Explorer (Pearson Prentice Hall, 2009)
		6-8.ESS3.D.1	Analyze evidence of the factors that have caused the change in global temperatures over the past century.		

		Objectives	<ul style="list-style-type: none"> Students will be able to describe the weather by measuring characteristics such as temperature, wind, and precipitation and collecting quantitative data. Students will be able to explain how meteorologists predict the weather and how forecasting has improved based on improvements in technology. Students will analyze real-world weather data. Students will analyze weather patterns. 			
		Key Terms	Weather, Air mass, Front, Cold front, Warm front, Stationary front, Occluded front			
		Common Assessments	Quiz: Weather Vocabulary Quiz Test: Weather Assessment			

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9	Climate Change	6-8.ESS3.D.1	Analyze evidence of the factors that have caused the change in global temperatures over the past century.	<ul style="list-style-type: none"> Notes Pollution Solution Review Game 	CANVAS Textbook: Science Explorer (Pearson Prentice Hall, 2009)	
		Objectives	<ul style="list-style-type: none"> Explain what climate change is. Describe some of the impacts of climate change. Provide examples of evidence of Earth's changing climate. Make predictions and observations in experiments. 			
		Key Terms	Climate change, carbon dioxide, aerosol, net zero, climate model, emissions, methane			
		Common Assessments	Quiz: Global Warming Vocabulary Test: Global Warming Assessment			

